Activity 9.9

1. When you try to make sense of other people, do you pay more attention to what they say or to what they do?
2. Do you agree that since consciousness cannot be objectively observed, it should not be part of psychology?
3. Would you be willing to reject talk of electrons in physics and genes in biology on the grounds that they cannot be directly observed?

Who really won the Centennial Olympics?

When we put numbers on things it sometimes creates a spurious sense of objectivity. After the 1996 Olympic Games in Atlanta, an article appeared in a Canadian newspaper headed 'Who really won the Centennial Olympics?' You might think that we can find the answer simply by consulting the official rankings.

Rank	Country	Medals total
1	USA	101
2	Germany	65
3	Russia	63
4	China	50
11	Canada	22

The above table shows some of the results, ranking the countries in terms of the total number of medals won. The USA came first with 101 medals, and Canada eleventh with 22. However, you might point out that simply knowing the *number* of medals each country got does not give us enough information to decide who really won the Olympics. We also need to know the *colour* of the medals. If the USA had 101 bronze and Germany 65 gold, there would be a strong case for saying that Germany, not the USA, had won the Olympics. Here, then, is the breakdown of medals won:

Country	Gold	Silver	Bronze	Medals total
USA	44	32	25	101
Germany	20	18	27	65
Russia	26	21	16	63
China	16	22	12	50
Canada	3	11	8	22

We now have to decide how to *interpret* these figures. Consider Germany and Russia: Germany won two more medals in *total* than Russia, but Russia won six more *gold* medals than Germany. So who did the best? Well, the standard Olympic convention is to award 3 points for a gold, 2 for a silver and 1 for a bronze. Following that convention we get the following results:

Rank	Country	Gold	Silver	Bronze	Points
1	USA	44	32	25	221
2	Russia	26	21	16	136
3	Germany	20	18	27	123
4	China	16	22	12	104
11	Canada	3	11	8	39

The only change at the top is that Russia and Germany change places. Canada stays in eleventh place.

But what if we now take into account the *population* of each country? After all, the USA has a much larger population base than Canada from which to choose its athletes. (At the time of the Atlanta Olympics, the figures were 255 million as against 28 million.) This dramatically changes the picture. If we now look at points per million we get the following result:

Rank	Country	Points per million
1	Tonga	20
2	Bahamas	6.6
3	Cuba	4.6
25	Canada	1.3
37	USA	0.9

If we look at the results in this way, some island nations rise to the top of the table. Cuba's results are now more than five times better than those of the USA, and Canada's results are 1.5 times better.

But we don't have to stop there. We might think of more ways of refining the ranking.

- Since children and seniors do not form part of the pool of potential athletes, we should perhaps take into account age distribution, and look not at points per million, but points per million of eligible age – say between 16 and 60.
- We might consider comparative wealth on the grounds that athletes from wealthy countries have better training facilities than their poorer counterparts.
- We might want to compensate for the fact that the USA had 'home advantage' – for it is well known that a team playing at home tends to do better than one playing away from home.

We now risk getting lost in a welter of rankings established in accordance with different criteria. It is beginning to look as if there is no clear answer to the question, 'Who won the Centennial Olympics?' Perhaps we should simply abandon the obsession with ranking countries. That, however, is easier said than done!

Activity 9.10

1 Do you think it is possible to answer the question 'Which country won the Centennial Olympics?' Does it matter?
2 'You can no more say that a gold medal is worth three bronzes than that an apple is worth two oranges.' What do you think of this criticism of Olympic rankings?
3 What effect do you think doing well in the Olympics, or winning the World Cup, might have on a country's economy?
4 What value, in general, is there in ranking things? Have you ever looked at university rankings? How seriously do you take them? How seriously should you take them?

One thing that seems to come out of the above discussion is that we run into problems when we try to measure different things – such as gold, silver and bronze medals – on a common scale. People are often accused of 'comparing apples and oranges' when they try to do this. However, an economist might argue that we can in fact compare different things on a common scale by looking at how much people are willing to pay for them. Whether or not it is in practice possible to put a price on everything, I leave for you to decide!

Activity 9.11

1 How would you go about trying to put a monetary value on a human life?
2 Can you think of situations in which society does the above? How do you feel about trying to weigh a life in terms of dollars and cents?
3 Which of the following is easy to measure and which is not? How would you go about trying to measure it?

a Weight	b Brand loyalty
c Temperature	d Social class
e Inflation	f Intelligence
g Happiness	h Reading ability
i Progress	j Age

4 What truth do you think there is in the following poem?

Economists have come to feel
What can't be measured isn't real.
The truth is always an amount
Count numbers only numbers count.
[Robert Chambers]

Experiments

We typically associate the word 'science' with a person in a white coat doing experiments in a laboratory. Ideally, experiments should play as big a role in the human sciences as they do in the natural sciences; but in practice this is not usually the case. There are at least three reasons for this.

1. Human scientists are often trying to make sense of complex real-world situations in which it is simply impossible to run controlled experiments.
2. The artificiality of some of the experiments that can be conducted may distort the behaviour of the participants.
3. There are ethical reasons for not conducting experiments that have a negative effect on the people who participate in them.

Faced with the above difficulties, what are human scientists to do? One solution is to wait for nature to provide the appropriate experimental conditions. We can, for example, learn something about how a normal brain functions by looking at people who have suffered brain damage; and we can gain some insight into the roles played by genes and the environment by studying identical twins who have been separated at birth and brought up in different families. In the case of economics, economic history can provide us with a bank of – admittedly not very well-controlled – experimental data.

However, human scientists do not just sit around waiting for natural experiments to arise. They also devise ingenious experiments of their own. Suppose you want to know how a baby sees the world. Does it see it as a 'blooming, banging confusion' as the psychologist William James (1842–1910) thought, or is there more of a structure to its experience? We cannot, of course, ask the baby since it has not yet learnt to speak. So it might seem that all we can do is *speculate*. That is what people thought until two psychologists, Elizabeth Spelke and Renée Baillargeon, pointed out that babies tend to stare at surprising things longer than at unsurprising ones. This key insight was like opening a window on to the developing mind. There was now a way of testing babies' expectations and getting some idea of how they see the world. The resulting experimental evidence suggests that, before they are six months old, babies have figured out that objects consist of parts that move together, are aware of the difference between living and non-living things, and can even do simple arithmetic!

Activity 9.12

1. How accurate do you think 'stare time' is as a way of measuring a baby's expectations? What if a baby looks at something for two seconds, looks away for three, and then looks back again for another two?
2. Do you think there is any danger in psychologists seeing what they want to see in these kinds of experiment?

The Milgram experiment

One of the best-known experiments in the history of psychology took place at Yale (USA) in 1963. Stanley Milgram was interested in the extent to which people are willing to obey orders. He advertised for volunteers to participate in an experiment allegedly to 'test the effects of punishment on learning'. When a volunteer arrived he was told that he was to play the role of 'teacher', and another 'volunteer' – in reality an actor – was to play the role of 'learner'. The learner was strapped to a chair and electrodes were put on his wrists. The teacher was then taken to an adjoining room and asked to give the learner a simple memory test. Every time the learner answered incorrectly, the teacher was to give the learner a successively higher electric shock by flicking a switch on a generator. Each switch was clearly labelled with voltage levels ranging from 15 to 450 volts, and verbal descriptions such as 'slight shock', 'strong shock', 'intense shock', 'danger', and finally 'XXX'. Although the teacher could not see the learner, he was able to hear his responses. Once the voltage reached 120V, the learner began to complain; at 150 volts he demanded that the experiment be stopped; at 270V he started screaming; and after 330V there was an ominous silence. Whenever the teacher hesitated to administer a shock, a scientist standing behind him insisted that it was very important that he continue with the experiment. In reality, of course, the learner did not receive any shocks, but the 'teacher' was not aware of this at the time.

Activity 9.13

1. Given your knowledge of human nature, what percentage of 100 volunteers do you think would continue administering electric shocks up to 450 volts?
2. If you had been a volunteer in this experiment, what do you think you would have done?

The result of the experiment was that almost two-thirds of the volunteers continued to give electric shocks up to 450 volts. Many expressed concern about what they were doing, and had to be reassured that they would not be held responsible for the fate of the learner; but it did not seem to occur to them to refuse to comply. Only one-third of the volunteers refused to continue to the end.

The Milgram experiment raises some disturbing questions about human nature. Why were so many of the volunteers willing to obey white-coated authority figures and give what they thought were lethal shocks to complete strangers? One crumb of comfort was that if, instead of working alone, the volunteer was paired with two other teachers (who were again actors), and the other teachers rebelled, then only 10% of the volunteers were willing to continue giving shocks up to 450 volts.

Changing perspective, we might question the ethics, not of the participants, but of the experiment. After all, the volunteers were misled about what they were getting involved in, were made to feel uncomfortable during the experiment, and may have suffered a permanent loss of self-esteem once the experiment was over. You are probably not going to feel great about yourself if you discover that you are the kind of person willing to administer a lethal electric shock to a stranger! On the other hand, it could be argued that the knowledge gained from the experiment outweighs any moral qualms we might have about the way it was carried out.

Activity 9.14

1 What difference do you think it would have made if the original advertisement asking for volunteers had mentioned electric shocks? What conclusion would you draw from this?
2 Design your own ethical code of conduct for the running of experiments in the human sciences. What three or four key points would you include and why?

Laws

While observation, measurement and experimentation are important parts of the scientific method, the main goal of science is to develop laws and theories to explain the phenomena that it studies. When it comes to the human sciences, however, our belief in **human free-will** would seem to conflict with the idea that there are law-like regularities in human behaviour. How, after all, could we ever reduce the behaviour of inconsistent, wilful and unpredictable human beings to a neat set of laws? Isaac Newton (1642–1727), for one, was doubtful, and famously observed: 'I can calculate the motions of heavenly bodies, but not the madness of crowds.'

Despite Newton's comment, a great deal of human behaviour does in fact seem to be fairly predictable. If people lack food, they are unhappy; if the price of lemons goes up, people buy fewer lemons; and – at least in the last school I worked in – if someone drops their tray in the dining hall, everyone cheers! We make literally thousands of generalisations about human beings every day, and if they were completely unpredictable no one would ever get in to a car and venture onto the road.

Activity 9.15

1 To what extent do you find the behaviour of your friends and family predictable? Do you ever find that when your parents are giving you advice you are able to finish many of their sentences for them?
2 What makes a person an interesting person? Would you prefer to have predictable friends, or unpredictable friends, or some combination of the two?
3 State three generalisations about human behaviour that you think are true of all human beings.

The law of large numbers

Although individual behaviour may be unpredictable, we can make surprisingly accurate short-term predictions about such things as the number of births, marriages and deaths in a country. The explanation for this derives from the **law of large numbers**, which says that in a large population *random variations tend to cancel out*. For example, there are all kinds of social customs and expectations which affect the number of people who get married in a particular time period. In general we can say that confirmed bachelors are

unlikely to get married and engaged couples are likely to get married. However, random factors are also at work and occasionally confirmed bachelors fall in love and marry, and engaged couples fall out of love and do not. If we are dealing with a large enough population, then the number of unexpected marriages is likely to be cancelled out by the number of unexpected non-marriages.

Activity 9.16

Briefly explain how the law of large numbers enables insurance companies to offer cover against risks such as car accidents, house fires, and death.

Since the law of large numbers enables us to predict group rather than individual behaviour, many laws in the human sciences are probabilistic in nature. Although I cannot predict with any certainty whether or not John Smith will get married this year, I may be able to predict the probability of this happening.

You might think that such probabilistic laws are inferior to the universal laws that are typically associated with the natural sciences. But in fact the laws governing the behaviour of atoms and genes are also of a probabilistic kind, and a physicist can no more predict the behaviour of an individual gas molecule than a human scientist can predict the behaviour of a man in a crowd.

Trends and laws

Despite the law of large numbers, the human sciences do not have a very good record of prediction. There is, for example, no consensus among demographers about the size of world population in fifty years' time; economic forecasters seem to get it wrong as often as they get it right; and almost no one predicted the collapse of communism in the 1980s. A well-known example of a prediction that turned out to be way off the mark was the one made by the population economist Paul Ehrlich in 1973. Ehrlich was very pessimistic about the state of the planet and he predicted that, by 1990, 65 million Americans would be starving to death. Ironically, that turned out to be the number of Americans who were overweight in 1990!

To understand why the predictions of human scientists sometimes turn out to be wrong, we need to explain the difference between a *trend* and a *law*. Critics argue that too often human scientists have simply uncovered trends rather than genuine laws. A trend shows the direction in which a variable is moving, but since it gives no explanation for the movement it is not very reliable. That is why 'betting on a trend' is a dangerous game. A horse may have won its last three races, and a company may have made profits for the last three years, but this alone does not mean that the horse will win its next race or the company will make a profit next year. If we know something about the horse's breeding and physical condition, or the company's financial background and investment strategy, we are likely to make better predictions than if we simply bet on a trend.

A good example of the danger of betting on a trend is the **Phillips curve** in economics. In the 1960s, an economist called A. W. Phillips gathered data on the relationship between inflation and unemployment in the UK from 1861 until 1967. The data appeared to suggest a stable relationship between the two, as illustrated in Figure 9.4.

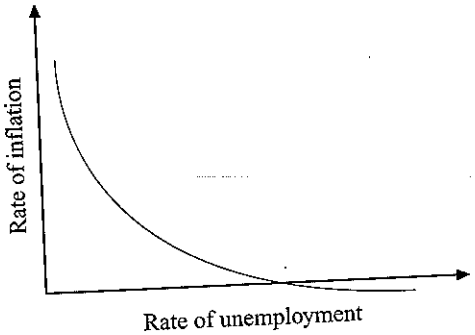

Figure 9.4 A Phillips curve

Many governments understood the curve to show that there was a trade-off between inflation and unemployment, and that lower unemployment could be bought at the cost of higher inflation, and vice versa. Unfortunately, when they tried to reduce unemployment by allowing inflation to rise, the Phillips curve broke down, and for much of the 1970s many countries experienced both rising inflation *and* rising unemployment.

What this example shows is that just because two things are *correlated* it does not follow that the first is the cause of the second. To think that it does is to commit the **fallacy of *post hoc ergo propter hoc*** (see Chapter 5). A correlation between two variables, A and B, could mean either that A causes B, or that B causes A, or that A and B are both caused by some other factor, C.

Activity 9.17

How might you explain each of the following correlations?

a Children with low self-esteem tend to do badly at school.
b People who watch violent movies tend to be violent in real life.
c As a country develops economically, birth rates tend to go down.
d Children brought up by talkative parents tend to be talkative themselves.
e Married people tend to be happier than unmarried people.

The complexity of real-world situations

Another reason why it might be difficult to uncover laws in the human sciences is the complexity of the situations they deal with. In the real world, it is often difficult to untangle a complicated web of causal relationships to determine which one is decisive.

Imagine, for example, that one night a man is driving along a country lane and crashes into a wall. He is lucky to escape unhurt, but his car is a write-off. What caused the crash? Here is some background information.

- The accident happened on a sharp bend on an unlit road.
- There was ice on the road.
- The man was speeding.
- He had drunk two pints of beer earlier in the evening.
- He was known to enjoy driving fast.
- He had just broken up with his girlfriend.

Given this information, it may be impossible to determine the *one* thing that caused the crash. Rather than search for a single cause, it might make more sense to say that it resulted from a *combination* of things. Perhaps if any one of the above facts had been different, the accident would never have happened. What this suggests is that it may be impossible to come up with a simple law of car accidents of the form 'If *X*, then there will be a car accident.'

If it is difficult to determine the cause of a small-scale event like a car accident, then it is a great deal more difficult to determine that of such complex phenomena as teenage depression, crime or inflation. And if we cannot say what the cause of an event was, then it will be hard to predict what will happen when similar events happen in the future. So it is perhaps not surprising that economists sometimes get their forecasts wrong!

Summary: the role of laws in the human sciences

We have seen that, although individuals may be unpredictable, the law of large numbers means that we can sometimes make accurate predictions about the behaviour of a large population. However, some of these predictions are based on trends rather than laws, and we should be careful not to confuse a correlation with a causal connection. In practice, the complexity of real-world situations means that it is difficult to unearth simple laws of the 'If..., then...' variety. Nevertheless, subjects such as economics still have many tried and tested laws, such as the law of demand and the law of diminishing returns.

The relationship between natural and human sciences

When we consider the relationship between the various sciences, it is commonly thought that there is a continuum of subjects running from the 'hard' natural sciences to the 'soft' human sciences. This reflects the fact that the human sciences have generally been held in lower esteem than their natural science cousins. For they seem to lack the explanatory power of Newtonian mechanics, or the atomic theory of gases, or molecular biology. Human scientists themselves have sometimes envied the mathematical rigour, immutable laws and cumulative nature of the natural sciences; and some people might even agree with Ernest Rutherford's (1871–1937) dismissive observation that, 'The only possible conclusion the social sciences can draw is: some do, some don't.'

Activity 9.18

Do you think there is a hierarchy of sciences? If so, try to order the various sciences according to any criteria of your choice. If not, explain why not.

Doubtless, subjects such as psychology, economics and anthropology are a great deal more valuable than uninformed common sense in helping us to make sense of the human condition. Nevertheless, there is a suspicion in some quarters that they still lack the well-established paradigms that characterise the natural sciences. Consider, for example, the following comparison between biology and psychology by the neuroscientists V. S. Ramachandran and J. J. Smythies:

> Anyone interested in the history of ideas would be puzzled by the following striking differences between advances in biology and advances in psychology. The progress of biology has been characterized by landmark discoveries, each of which resulted in a breakthrough in understanding – the discoveries of cells, Mendel's law of heredity, chromosomes, mutations, DNA and the genetic code. Psychology, on the other hand, has been characterized by an embarrassingly long sequence of 'theories,' each really nothing more than a passing fad that rarely outlived the person who proposed it.

Reductionism

Some thinkers hold out the hope that, as our knowledge in areas such as neuroscience and genetics grows, it will eventually be possible to establish the human sciences on firmer foundations. Since it seeks to explain some subjects in terms of other, more fundamental, ones, such a position is known as **reductionism**. A reductionist might, for example, argue that one day we will be able to understand economics in terms of psychology, and psychology in terms of neuroscience. At the limit, a reductionist might argue that everything is ultimately a matter of atoms whizzing around in space in accordance with the laws of physics (see Figure 9.5).

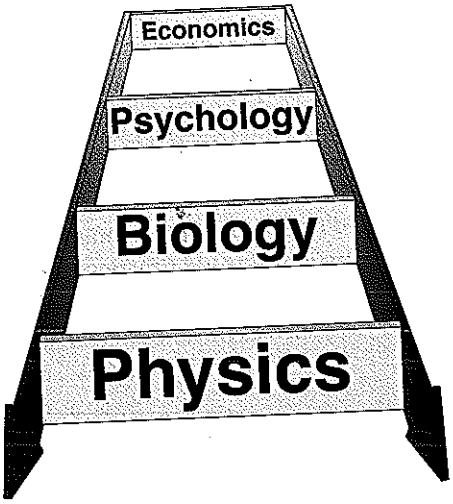

Figure 9.5 Reductionism

Since science is supposed to explain complex phenomena in terms of simpler underlying principles, reductionism might seem to be an attractive position. A subject such as physics has, after all, been amazingly successful in explaining a wide variety of phenomena in terms of a small number of underlying laws. A good example of the success of this approach was the reduction of thermodynamics to mechanics, which enabled scientists to explain heat in terms of the motion of molecules. Perhaps in a similar way we will one day be able to explain mental phenomena in terms of underlying physical ones.

The reductive fallacy

When we try to explain complex things in terms of simpler underlying ones, there is, however, a danger that we commit the **reductive fallacy**. This is the fallacy of saying that just because *A* is composed of *B* it follows that *A* is *nothing but B*. Here are some examples of such 'nothing-butism':

A cathedral is nothing but a heap of stones.
A violin sonata is nothing but a sequence of vibrating strings.
A human being is nothing but a bunch of chemicals.

At one level, it is true that we are 'just a bunch of chemicals'; and it is humbling to discover that there is no secret ingredient in the recipe for a human being, and that we are made of the same basic stuff as cats, cucumbers and chrysanthemums. Nevertheless, there is all the difference in the world between so much hydrogen, oxygen and carbon measured out in a chemistry laboratory and a living human being. We may know the ingredients that make up a human being, but we are still very far from understanding the recipe!

There are, in fact, good reasons for doubting that the reductionist programme can succeed. For it has been pointed out that when simple things are combined together the resulting properties cannot always be predicted in advance from their constituent elements. This is as true in the physical world as in the human world. For example, if you combine hydrogen with oxygen, the property of wetness emerges from two non-wet elements. Similarly, when you combine sodium, one of the most unstable elements, with chlorine, one of the most toxic, you end up with salt – a stable compound which tastes good on food!

Since we cannot even reduce chemistry to physics, it seems unlikely that we will ever be able to explain the human sciences in terms of physics. In any case, the resulting knowledge would probably not be very useful. Trying to understand the laws of supply and demand at the level of atoms and molecules would be like trying to learn a computer program by analysing the flow of electrons through the electrical circuits. If you want to know what determines the price of fish, you would do better to read a book on economics than one on atomic physics!

Holism

The reductionist idea that the best way to understand something is to break it up into parts seems particularly inappropriate when it comes to the study of living things. For, as the writer Douglas Adams (1952–2001) observed, 'If you try to take a cat apart to see how it works, the first thing you have on your hands is a non-working cat.' This might suggest that we can only make sense of some things by looking at them as a whole. Such a view is known as **holism**, and its central claim is that *the whole is greater than the sum of the parts* – that the whole contains properties that cannot in principle be discovered through an analysis of the parts.

When applied to the human sciences, holism means that you cannot understand a group only in terms of the individuals that make it up, or an action independent of the context in which it takes place. Thus economists distinguish between macro-economics – which studies the economy as a whole – and micro-economics – which studies the behaviour of individual economic agents – on the grounds that you cannot understand a complex economy simply

by analysing the behaviour of individual economic agents. And anthropologists insist that you should immerse yourself in a culture before trying to make sense of its individual practices. At a more mundane level, you may have noticed that a class at school can have an atmosphere which cannot always be explained in terms of the people in it.

Activity 9.19

1. Do you think that a group can have a 'character' that is distinct from the individuals that make it up?
2. A football team may consist of eleven great players and yet do badly in the league. How would you explain this?
3. What do you understand by 'team spirit'? Is 'team spirit' the sum of the 'spirit' of each individual on the team? If not, where does it come from?

At the heart of the argument between holism and reductionism is the question of the relation between wholes and parts. Rather than make an *either–or* choice between these two positions and say that you must understand the whole in terms of its parts, or the parts in terms of the whole, perhaps it would be better to think in terms of there being two-way traffic between parts and wholes. Take, for example, the relation between individuals and society. Although society is influenced by the individuals that make it up, it is also true that individuals are affected by the society they live in. To ask which comes first may make no more sense than asking whether the chicken comes before the egg or the egg before the chicken.

The *Verstehen* position

One reason for doubting that we will ever be able to reduce the human sciences to the natural sciences is that they typically explain things in terms of *meanings* and *purposes* rather than mechanical causes and effects. To illustrate the difference between these kinds of explanation, imagine that a group of Martian scientists land on planet Earth on a busy road near some traffic lights. They notice that when the lights turn red the traffic stops and when the lights turn green it moves again. After observing the traffic for several hours, they conclude that red light causes a temporary malfunction in car engines. Unfortunately, they have come up with the wrong *kind* of explanation. What causes the traffic to behave as it does is the existence of a social *rule* which says that a red light *means* stop and a green light *means* go. If the Martians analyse the situation in terms of physics they will never figure out what is happening – for you cannot conjure social rules out of atoms and molecules.

According to what is known as the ***Verstehen* position** – *Verstehen* is German for 'understanding' – the main aim of the human sciences is to understand the meaning of various social practices *from the inside* as they are understood by the agents themselves. The common sense of this is that, if you want to figure out what a group of people are up to, you cannot simply observe their physical movements, but must try to get 'inside their heads' and understand how *they* see the situation. If you are unable to do this, then you are likely to misunderstand what is happening. For example, a Martian anthropologist who knows nothing about sports might misinterpret a cricket match as a religious ritual in which a bowler tries to kill a batsman with a speeding projectile.

Activity 9.20

Imagine that you are such a Martian anthropologist with no understanding of human practices. Try to think up bizarre explanations for some of the following rituals:

a Eating at McDonalds
b Taking an IB exam
c Attending a birthday party
d Checking in at an airport
e Shopping at a supermarket
f Working out in a gym
g Going to the hairdressers

Since many explanations in the human sciences are in terms of meaning rather than mechanism, it is perhaps not surprising that the human sciences have few universal laws to their credit. For the meaning of an action depends on the *context* in which it takes place, and it is therefore difficult to generalise. For example, if a man is writing his name on a piece of paper, he could be writing a cheque, giving an autograph, or signing a death warrant. Since the consequences of the same physical action are completely different in each case, you cannot make a universal law of the form, 'If a person writes his name, then...'

Activity 9.21

Think of as many different explanations as you can for each of the following actions:

a A woman picks up a glass of wine.
b A man goes out with an umbrella.
c A woman walks into a room, walks round, and walks out again.
d A man gets a gun out.
e A woman waves her hand.

While the *Verstehen* approach to making sense of human behaviour is illuminating, we should not get carried away with it. Just because a lot of human behaviour can only be understood in context, we should not, for example, conclude that there are *no* universals in the human sciences. On the contrary, anthropologists have found many traits that seem to be common to all cultures – including gossiping, joking, and taking an interest in sex!

We should also be cautious about taking people's self-descriptions at face value, for the consequences of their actions sometimes bear little relation to their intentions. In the case of economics, Adam Smith (1723–90) famously argued that although individuals tend to seek their own gain, they are led by an 'invisible hand' to promote the general good. For example, an entrepreneur's desire for profit may result in our ending up with cheap high-quality goods and services. This suggests that as well as trying to understand people's behaviour from the inside, social scientists should also look at the *unintended consequences* of their actions. When it comes to studying something as complicated as a human being, there is no reason why we should limit ourselves to a single approach. Truth has many eyes!

The problem of bias

One common accusation against the human sciences is that they are more prone to bias – and therefore less scientific – than their natural science cousins. We are, after all, more likely to begin with prejudices about the nature of individuals and societies than we are about the nature of atoms and molecules. This means that we may find it difficult to be genuinely open-minded about controversial topics such as gender differences or taxation policy. In this situation, the danger is that we simply look for evidence that confirms our pre-existing prejudices while overlooking evidence that contradicts them.

Since we naturally form emotional attachments with other people, a related problem is that a human scientist may over-identify with the people she is studying. When, for example, an anthropologist 'goes native' and lives with a tribe, her insider's understanding of the culture may be bought at the expense of her ability to be objective.

At this point, it is worth recalling that bias can also be a serious problem in the natural as well as the social sciences (see our discussion of **confirmation bias** on pages 230–1). A physicist, for example, may be so committed to his own pet theory that he obstinately refuses to abandon it in the light of contrary evidence. Since natural scientists are only human, they will sometimes be swayed by emotion as well as reason, and there are plenty of controversies in physics, chemistry and biology that are as vicious and partisan as anything that can be found in the human sciences.

Whatever the subject matter, a good antidote to bias is to make it a matter of principle to actively look for evidence that would count *against* your hypothesis. For example, if you think that younger siblings are more rebellious than older ones, you should not only trawl for evidence that confirms your hypothesis, but also look for examples of rebellious older siblings and conformist younger ones. Fortunately, scientists routinely check up on and criticise one another's results, and this helps to ensure that poor and obviously biased research is discredited. Indeed, it could be argued that one of the great strengths of science is that in the long run it tends to be self-correcting – and there is no reason to think that this is any less true of the human sciences than of the natural sciences.

Activity 9.22

1 Who do you think would be the best judge of a child's character?
   a their parents
   b their teachers
   c a professional psychologist
   Give reasons.
2 Give some specific examples of bias that you have come across in the natural sciences and human sciences that you have studied.
3 Explain what is meant by 'falsificationism', and how it can help to reduce the danger of bias in scientific research. (You may wish to refer back to Chapter 8 to remind yourself about falsificationism.)

Predictions

We saw in our discussion of laws and trends that the human sciences have been less successful than the natural sciences in making accurate predictions. In seeking to explain this fact, three points can be made in their defence:

1 The human sciences usually deal with extremely complex situations in which it is not possible to run controlled experiments. Indeed, it could be argued that when critics contrast the success of the natural sciences with the lack of success of the human sciences they are not comparing like with like. For it is a great deal more difficult to make accurate predictions in the real world than in the controlled conditions of the physics laboratory. You may, for example, know a lot of physics, but still be unable to predict where a leaf blown off a tree on a windy autumn day will land. Changing the analogy, we might say that trying to predict human behaviour is a bit like trying to predict the course of a water molecule going over Niagara Falls. While there is nothing difficult about it in theory, in practice there are simply too many variables for us to be able to make accurate predictions.

Activity 9.23

Do you think that weather forecasting is generally more or less reliable than economic forecasting?

2 Some of the predictions made by social scientists are valuable, not because they accurately describe the future, but because they give us an incentive to change it. If, for example, economists in Ruritania predict that unemployment is likely to rise by 20 per cent in the next two years unless something is done, then the Ruritanian government will have a strong incentive to change its policies and try to ensure that the prediction is falsified.

3 Advocates of the *Verstehen* position might argue that the purpose of the human sciences is not so much to explain and predict as to describe and understand.

The above points might help to explain the human sciences' poor record of prediction. But a critic might give a less flattering explanation and argue that the human sciences' lack of success shows that they are at a pre-paradigm stage in their development and await a Newton to establish them on a proper scientific foundation.

Activity 9.24

Look at the table below. In seeking to defend the human sciences, how would you respond to each of the problems mentioned?

Human sciences: summary of problems		
Observation	1	We cannot directly observe other people's minds.
	2	Questionnaires may be misleading or biased.
	3	Observing people may affect the way they behave.
Measurement	4	Social phenomena are difficult to measure.
Hypothesis	5	The act of prediction may affect the behaviour predicted.
Experiments	6	Human sciences study complex social situations in which it is difficult to run controlled experiments.
	7	Various moral considerations limit our willingness to experiment.
Laws	8	Human sciences are not very good at predicting things.
	9	Human sciences usually uncover trends rather than laws.
	10	Science laws are probabilistic in nature.

Conclusion

We might conclude our discussion of the human sciences by saying that they are neither as flawed as their critics believe nor as successful as their defenders hope. Since they deal with complex phenomena, it is perhaps not surprising that they seem to lack the explanatory power of the natural sciences. Nevertheless, we can learn a great deal more about human beings by studying subjects such as psychology, economics and anthropology than we can by relying on uninformed common sense.

Any discussion about the human sciences inevitably raises some big questions about our place in the scheme of things. How, for example, are minds related to bodies? Could a machine think? Do we have free-will? Could a mind exist without a body? Perhaps scientific research will cast light on these questions, but it may be that in this area there are mysteries that will always lie beyond our understanding.

Key points

- Since human beings seem to be different from other natural phenomena, we may wonder to what extent they can be studied in a purely scientific way.
- Among the problems that arise in trying to get information about other people are that it is difficult to frame questions in a neutral way and that observing people may affect the way they behave.
- Some important phenomena in the human sciences are difficult to measure, and this can make it difficult to study them scientifically.
- Social scientists have devised many ingenious experiments, but ethical considerations limit our ability to conduct experiments on human beings.
- Although a great deal of human behaviour is predictable, it is unclear how far it can be reduced to law-like regularities.
- Since we typically explain human behaviour in terms of its meaning and purpose, we may never be able to reduce the human sciences to the natural sciences.
- Since they deal with controversial topics, the human sciences are more prone to bias than the natural sciences, but the extent of the problem should not be exaggerated.
- A question that continues to perplex both scientists and philosophers is how the mental is related to the physical.

Terms to remember

bear market
behaviourism
bias
bull market
free-will
going native
holism
human free-will
law of large numbers
loaded question
mirror test
nature–nurture debate
observer effect
Phillips curve
post hoc ergo propter hoc fallacy
reactance
reductionism
reductive fallacy
stream of consciousness
trends and laws
Verstehen position

Further reading

Reuben Abel, *Man is the Measure* (Macmillan, 1976), Chapter 11: 'The social sciences'. This chapter is a good introductory account of the social sciences. A large part of it is taken up with an excellent discussion of the *Verstehen* position.

Steven Pinker, *The Blank Slate* (Penguin, 2002), Chapter 17: 'Violence'. Pinker argues that many human traits, such as violence, are more the result of genetic inheritance than environmental conditioning. He writes with such verve and style that, whatever your own beliefs, this chapter should engage your interest.